04415

Theory of Absorption of Ultrasonic Waves by Metals in a Strong Magnetic Field. II

S/056/60/039/004/033/048
B006/B063

later paper. There are 7 Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk USSR (Institute of Radiophysics and Electronics of the Academy of Sciences, UkrSSR)

SUBMITTED: May 13, 1960

Card 3/3

88423

S/056/60/039/006/007/063
B006/B056

24.7700 (1043,1143,1559)

AUTHORS: Galkin, A. A., Kaner, E. A., Korolyuk, A. P.

TITLE: Investigation of Ultrasonic Absorption by Metals in a Magnetic Field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 6(12), pp. 1517-1528

TEXT: The characteristics of ultrasonic absorption in metals at low temperatures under conditions at which the mean free path l of the electrons is very large with respect to the acoustic wavelength λ have already repeatedly been investigated both theoretically and experimentally, above all the periodic change in the ultrasonic absorption coefficient α as a function of H^{-1}. The first theoretical calculations are by Fermi and V. L. Gurevich. In the present paper, the theoretical and experimental results are given, and compared for tin and indium. First, the magnetoacoustic resonance and the oscillation of α are investigated for a strong magnetic field, as well as the conditions $\vec{k}\perp\vec{H}$ ($\vec{k}$ - wave vector) and $\lambda \ll 2\pi r \ll l$.

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88423

Investigation of Ultrasonic Absorption by Metals in a Magnetic Field

S/056/60/039/006/007/063
B006/B056

For tin- and indium crystals typical oscillation diagrams are shown and discussed. Two different types of oscillations are said to occur in tin: Anharmonic resonance oscillations and sinusoidal oscillations. Those of the first kind are ascribed to the existence of an open Fermi surface; the period of the open surface, calculated on the basis of oscillation periods, is in agreement with crystallographic data. A study was made of the anisotropy of ultrasonic absorption in a strong magnetic field and when the condition $r \ll \lambda \ll 1$ is satisfied (r is the characteristic parameter of the electron orbit), and theoretical and experimental results were intercompared. The anisotropy of the oscillation periods along the various crystallographic directions was analyzed, and the anisotropy and frequency dependence of α saturation was examined. An analysis of periods, amplitudes, oscillation-phases and the shapes of absorption curves for tin are in agreement with a Fermi surface model, which is a plane network of "corrugated" cylinders directed along the [110] and [$1\bar{1}0$] crystallographic axes. The causes for some quantitative discrepancies between theory and experiment are discussed. A. I. Akhiyezer, N. Ye. Alekseyevskiy, Yu. P. Gaydukov, B. N. Aleksandrov, and B. I. Verkin are mentioned. There are 8 figures and 25 references: 16 Soviet, 7 US, 1 Japanese, and

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88423

Investigation of Ultrasonic Absorption by Metals in a Magnetic Field

S/056/60/039/006/007/063
B006/B056

1 Canadian.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR
(Institute of Radiophysics and Electronics of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: June 22, 1960

Card 3/3

83555
S/020/60/134/001/006/021
B019/B060

1143
1115
1099
9,2585

AUTHORS: Galkin, A. A., Kaner, E. A., Korolyuk, A. P.

TITLE: A New Kind of Oscillations of the Ultrasonic Absorption Coefficient in Metals in a Magnetic Field

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1, pp. 74-76

TEXT: The authors show in this article that under certain conditions the variation of the ultrasonic absorption coefficient in metals has a resonance character in the presence of a magnetic field. Fig. 1 shows the ultrasonic absorption coefficient in tin as a function of the magnetic field. The diagram was drawn with $\vec{H} \perp \vec{k}$ in the (110) plane, and $\vec{k}$ was in the direction of the [101] axis. The marked maxima are due to relation (1): $\bar{\beta} = \frac{\vec{k}\vec{v}}{2\pi} T \neq 0$, where $\bar{\beta}$ and $\vec{v}$ are the shift and velocity of the electron averaged over the period. The existence of resonance oscillations in certain angular intervals was revealed by examinations of

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9,9300

S/141/61/004/002/017/017
E133/E135

AUTHORS: Bass, F.G., and Kaner, E.A.

TITLE: Phase and amplitude fluctuations in very long distance propagation of electromagnetic waves above the earth's surface

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol.4, No.2, pp. 377-379

TEXT: The authors consider the case when the receiver is below the transmitter's horizon. The intensity of the signal received then depends on scattering in the relatively small region of space where the directional diagrams of the transmitter and receiver intersect (see Fig.1). The present note is restricted to a consideration of the amplitude and phase fluctuations when these are determined by scattering, although the mean value of the field is determined by diffraction, i.e.:

$$\xi(r) = (k^2/4\pi)^2 \, p \, [n' \, [en']] \int d\rho \, \delta\varepsilon(\rho) \exp(iq\rho)(rr_o)^{-1} \exp \\ \exp(ikr + ikr_o) \qquad (1)$$

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Phase and amplitude fluctuations in ... S/141/61/004/002/017/017
E133/E135

An expression for the fluctuating component has been given by L.D. Landau and Ye.M. Lifshits (Ref.5: Elektrodinamika sploshnykh sred, "Electrodynamics of continuous media", GITTL, M., 1958). It can be found from this that the mean square values of the real, ξ_r, and imaginary, ξ_i, parts of the vector $\underline{\xi}$, representing the fluctuations, are given by:

$$\langle \xi_i^2 \rangle = \langle \xi_r^2 \rangle = \frac{1}{2} \langle |\xi^2| \rangle \quad ; \quad \langle \xi_r \xi_i \rangle = 0 \qquad (2)$$

Eq.(2) holds for $(q \rho_0)^{-1} \ll 1$ (where ρ_0 is a characteristic dimension of the scattering volume and q represents the change in the wave vector due to scattering). This is true for the present situation. As the transmitter-receiver distance is increased, the fluctuating component falls off much less rapidly than the regular component. Hence at great distances the latter can be ignored in comparison with the former. At such distances the mean square fluctuations of phase and amplitude are given by:

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Phase and amplitude fluctuations in... S/141/61/004/002/017/017
E133/E135

$$\langle \delta\varphi^2 \rangle = \pi^2/3, \quad \langle (\ln A - \langle \ln A \rangle)^2 = \pi^2/24,$$
$$\langle \varphi \rangle = \pi/2, \quad -\frac{\pi}{2} < \varphi < \frac{3\pi}{2} \qquad (6)$$

If the fluctuating component is small in comparison with the regular component, the fluctuations in phase and relative amplitude are equal and given by:

$$\sigma = \langle |\xi^2| \rangle / 2|E^2| = \frac{1}{2}(k^2 R \sin \chi / 4\pi |V| g_1 g_2)^2 \int \langle \delta\varepsilon^2 \rangle (r_o r)^{-1} \ldots$$
$$\ldots dv\, W(q) \qquad (3)$$

This relation does not give explicitly the dependence on distance, frequency, etc. which can be derived, however, from:

$$\sigma \sim R^{-2(n+1)} (g_1 g_2)^{-2} \, |f(h_o) f(h)|^{-1} \exp(2t_1 x) \qquad (8)$$

where: $x = (ka/2)^{1/3}\Theta$; $t_1 \simeq 2.03$; and the remaining factors are shown in Fig.1.

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Reflection from the earth's surface is not considered in the present paper - the result of including it is simply to change slightly the effective scattering volume. Since the mean field value dies away exponentially, the fluctuations, in comparison, grow rapidly. It should be noted, however, that they also depend on the factor $R^{-2(n+1)}$ where, according to the experimental data (Ref.6: D.I. Vysokovskiy, book "Some Problems of Long Distance Propagation of Ultrashort Waves" (Nekotoryye voprosy dal'nego raspostraneniya ul'trakorotkikh voli), Izd. AN SSSR, M., 1958), $n \simeq 2$. Eq.(8) was derived under the condition of small fluctuations; these do not, therefore, tend to infinity as the equation otherwise implies. The authors thank A.V. Men' for his opinion of the manuscript.
There are 1 figure and 6 Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki, AN USSR (Institute of Radiophysics and Electronics, AS Ukr.SSR)

SUBMITTED: October 21, 1960

33204

9.9445 (1538)

S/141/61/004/005/006/021
E032/E114

AUTHORS: Bliokh, P.V., and Kaner, E.A.

TITLE: Interaction of an electron beam with electromagnetic waves in an anisotropic dielectric

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, vol.4, no.5, 1961, 875-885

TEXT: The authors discuss, on the linear approximation, the interaction of an electron beam with electromagnetic waves in an infinite anisotropic dielectric. It is stated that the problem has been treated by namy authors most of whom confined their attention to the case where the direction of the beam is parallel to the axis of the anisotropic crystal. A.M. Frank (Ref.5: ZhETF, v.38, 1751 (1961) and Ref.4: UFN, v.68, 397 (1959)) has shown that the Cherenkov radiation emitted by a charged particle passing through a crystal at an angle to the optic axis has a number of important properties, e.g. the direction of the energy flux and the direction of the phase velocity are not the same. This suggested to the present authors that the interaction of an

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E032/E114

Interaction of an electron beam ...

obliquely incident electron beam with slow waves may also give rise to interesting phenomena. They consider a quasi-neutral electron beam passing through an anisotropic dielectric placed in a strong magnetic field which prevents transverse displacements of the particles. The theory is confined to the case of a uniaxial crystal. The equations of motion and Maxwell's equations can then be shown to yield the following relation:

$$k^2\underline{E} - \underline{k}(\underline{kE}) + n \frac{\omega\Omega_0^2\,(\underline{En})}{c^2(\omega - v_0(\underline{kn}))} + \frac{\omega^2}{c^2}\left(\frac{v_0}{\omega}\,\underline{n}(\underline{kD}) - \underline{D}\right) = 0 \qquad (1)$$

where: $v_0\underline{n}$ is the undisturbed velocity of the beam, $\underline{n}$ is a unit vector, $\Omega_0 = (4\pi Ne^2/m)^{1/2}$ is the plasma frequency, N is the particle concentration, and the electric field E and induction D are related by $D_i = \varepsilon_{ik}E_k$. The dependence of all the variables on $\underline{r}$ and t is given by:

$$\exp i(\underline{kr} - \omega t).$$

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33204

The above expression is used to derive the usual dispersion relations for the ordinary and the extraordinary waves. A graphical analysis is then made of the dispersion relations and a classification is derived for the unstable states. The classification is based on the work of P.A. Sturrok (Ref.8: Phys. Rev., v.112, 1488 (1958)). An analysis is then made of the angular dependence of the generation and amplification coefficients $\nu = \mathrm{Im}\,\omega$ and $\varkappa = \mathrm{Im}\,k$. It is shown that, depending on the parameters of the beam and the dielectric, the instability may be absolute or convective. It is noted that the instability of a beam which is parallel to the direction of the wave vector can only occur in an anisotropic dielectric when the common direction of the beam and the wave is at an angle to the crystal ax s. Acknowledgments are expressed to Ya.B. Faynberg, V.I. Kurilko, V.D. Shapiro and R.V. Polovin who supplied pre-prints of their work in this field prior to publication.
There are 8 figures and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc. The English language reference reads as follows:
Ref.8: P.A. Sturrok. Phys. Rev., v.112, 1488 (1958)

33204

Interaction of an electron beam ... S/141/61/004/005/006/021
E032/E114

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radiophysics and Electronics, AS Ukr.SSR)

SUBMITTED: December 29, 1960

Card 4/4

89216

S/056/61/040/001/022/037
B102/B212

24.7500 (1136,1143,1160)

AUTHORS: Kaner, E. A., Peschanskiy, V. G., Privorotskiy, I. A.

TITLE: Theory of magnetoacoustic resonance in metals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 1, 1961, 214-226

TEXT: Sound waves generate a field in metals which is spatially periodic; if there is an outer magnetic field $\vec{H}(0,0,H)$, this periodicity will lead to a non-monotonic dependence of the ultrasonic absorption coefficient α on H. This effect has been first explained by Pippard. V. L. Gurevich has developed a theory of this phenomenon for closed Fermi surfaces, and he has shown that there can exist two types of periodicity of α as a function of H^{-1}: Harmonic oscillations (here called non-resonance oscillations), and smooth periodic decreases. The effect of resonance absorption of ultrasonics in metals studied here is of a novel type as to its nature. In many respects the mechanism of this magnetoacoustic resonance is in many respects analogous to that of a cyclotron resonance in metals; it is, however, not a

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89216

Theory of magnetoacoustic resonance... S/056/61/040/001/022/037 B102/B212

function of the time periodicity but a function of the spatial periodicity of the field in metals. A magnetoacoustic resonance will take place if the electron velocity in the direction of the wave vector $\vec{k}$, averaged over the period T of motion in the magnetic field, is not zero. For closed electron trajectories this will occur only if $\vec{k}$ and $\vec{H}$ are not at right angles; for open trajectories resonance can be found even if $\vec{k} \perp \vec{H}$ provided $\vec{k}$ is not parallel to the trajectory. Calculations have been done both for open and closed electron trajectories. At first a general formula for the absorption coefficient is derived by using results of Gurevich, A. I. Akhiyezer, M. I. Kaganov, and G. Ya. Lyubarskiy; the resonance absorption of ultrasonics is then examined. Position, width, and height of resonance peaks are determined as functions of frequency, magnetic field strength, Fermi surface structure, field orientation, and direction of sound propagation relative to the crystallographic axes. A distinct dependence between angle and absorption coefficient has been determined. The magnetoacoustic resonance is very well suited to determine topology and shape of Fermi surfaces in metals. a) The resonance oscillations of the non-resonance type for $\vec{k} \perp \vec{H}$, are related to the existence of open periodic trajectories with a given $\vec{H}$

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89216

S/056/61/040/001/022/037
B102/B212

direction. Resonance at $\vec{k}\vec{H} \neq 0$ points to a non-convexity of the Fermi surface; i.e., the law of dispersion deviates considerably from a quadratic form. b) If there are open periodic trajectories for a given direction of $\vec{H}$ then a distinct maximum will be observed on the rotational diagram of $\vec{k}$ in the plane $\vec{k} \perp \vec{H}$, if $\vec{k}$ is parallel to the open periodic trajectory. The maximum in question is a principal maximum, and its position is not a function of $|\vec{H}|$; the position of the secondary maxima is shifted as $|\vec{H}|$ changes. For closed trajectories, if $\vec{k} \perp \vec{H}$, the absorption is nearly isotropic, and no resonance oscillation will occur. c) In order to determine the shape of the Fermi surfaces, the non-resonance oscillation of the harmonic type can be used and its period is determined by the extremal dimensions of the Fermi surface in the $[\vec{k}\vec{H}]$ direction. A strong anisotropy in the angular dependence of the amplitudes of the non-resonance oscillations, due to open periodic trajectories, permits the determination of the extremal dimensions of open and closed trajectories separately. Experimental results (e.g. of A. A. Galkin and A. P. Korolyuk) agree well with theoretical predictions. The authors thank L. D. Landau, I. M. Lifshits, M. I. Kaganov, and V. L. Gurevich for discussions. There are 4 figures, 1 table and 12

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89216

Theory of magnetoacoustic resonance...

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B102/B212

references: 10 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR (Institute of Radiophysics and Electronics, Academy of Sciences Ukrainskaya SSR). Khar'kovskiy gosudarstvennyy universitet (Khar'kov State University)

SUBMITTED: July 9, 1960

Card 4/4

87576

9.9000
9.9840

S/053/61/073/001/003/004
B006/B056

AUTHORS: Bass, F. G., Braude, S. Ya., Kaner, E. A., Men', A. V.

TITLE: Fluctuations of Electromagnetic Waves in the Troposphere in the Presence of a Boundary Surface

PERIODICAL: Uspekhi fizicheskikh nauk, 1961, Vol. 73, No. 1, pp. 89-119

TEXT: The present article is a review of theoretical and experimental studies on frequency, phase, and amplitude fluctuations of electromagnetic waves propagating in the troposphere as a result of atmospheric inhomogeneities. The effect of these fluctuations upon wave propagation in an infinite medium was first pointed out by Smolukhovskiy; further investigations by Einstein, Rayleigh and others (Refs. 1 - 14) followed. However, it proved to be of essential importance to the theory of wave propagation to take the existence of a boundary surface (surface of the Earth) into account; this leads to interference effects and other phenomena, and the theory is found to deviate essentially from the theory of fluctuation effects in a free atmosphere. The first part is a review of essential theoretical papers in this field. First, the statistical characteristics

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Fluctuations of Electromagnetic Waves in the Troposphere in the Presence of a Boundary Surface

S/053/61/073/001/003/004
B006/B056

of the electromagnetic field above the plane boundary are discussed, after which fluctuations of the electromagnetic field in an infinite space are discussed. In the following, the qualitative effect of a boundary upon the fluctuations of this field are studied, and a mathematical representation of the fluctuation field and of the mean field above the boundary is discussed along with some limiting cases. In the following chapters, amplitude and phase fluctuations in the far zone are discussed, and the correlation of fluctuations above the boundary are dealt with. The second part presents results obtained by experimental investigations of fluctuations. In the course of investigations of ultrasonic wave propagation, frequently the presence of intensive fluctuations of radio-signals during their passage through the troposphere was observed. The investigations of these fluctuations, however, are mostly of local character, so that a comparison with the theory presents difficulties. In recent times, investigations have been extended over larger areas (above all oceans), so that more general results are now available. In detail, the authors discuss the method of measuring radiosignal fluctuations, the main characteristics of fluctuations, the various types of phase fluctua-

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87576

Fluctuations of Electromagnetic Waves in the Troposphere in the Presence of a Boundary Surface

S/ 53/61/073/001/003/004
B006/B056

tions, and the dependence of fluctuations on distance and meteorological conditions. An experimental-theoretical comparison proves the considerable influence exerted by taking the boundary into account: It leads to a quicker increase of fluctuations with growing distance, to a change in the frequency dependence, to the occurrence of fluctuation flashes, to a quick increase of the fluctuation intensity in the minima of the mean field, etc. The problems to be theoretically solved in future consist in taking the curvature of the boundary, the anisotropy, and the instability with time of the medium into account. B. A. Vvedenskiy is mentioned. There are 12 figures and 45 references: 29 Soviet and 16 US.

Card 3/3

24.7900

26179
S/181/62/004/003/019/045
B125/B108

AUTHORS: Kaner, E. A., and Nabutovskiy, V. M.

TITLE: Effect of a slightly inhomogeneous magnetic field on resonance phenomena in metals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 3, 1962, 685-691

TEXT: Peculiarities of magnetoacoustic and cyclotron resonances in metals placed in a slightly inhomogeneous field were studied theoretically neglecting the insignificant transverse drift. By solving the kinetic equation

$$\left(\frac{d\chi}{dt}\right)_{\ldots} + \nu\chi = g, \qquad (2)$$

$$\left(\frac{d}{dt}\right)_{\ldots} = i\omega + \mathbf{v}\nabla - \frac{e}{c}[\mathbf{v}\mathbf{H}]\cancel{}\frac{\partial}{\partial p}, \qquad (3)$$

$$g = \Lambda_{ik}u_{ik}. \qquad (4)$$

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by the method of characteristics, one obtains (like for a homogeneous field) the expression

$$\alpha(\mathbf{H}) = \frac{eH(\mathbf{H})}{h^3 W_0} \int\limits_{\varepsilon=\mu} dp_H \sum_{t_\alpha} g_\alpha^* J_\alpha^* \times$$

$$\times \left\{ \frac{1}{2} g_\alpha J_\alpha + \sum_{-\infty < t_\beta < t_\alpha} g_\beta J_\beta \exp\left[(i\omega + \nu)(t_\beta - t_\alpha) + i\mathbf{k}(\mathbf{r}_\beta - \mathbf{r}_\alpha) \right] \right\}, \qquad (9)$$

for the coefficient of absorption of ultrasound. Here, $\chi\delta(\varepsilon - \mu)$ is the non-equilibrium additional term in the Fermi distribution function $f_0(\varepsilon - \mu)$; ε, $\vec{p}$, $\vec{v} = \partial\varepsilon/\partial\vec{p}$ are energy, quasimomentum, and velocity of the electron; ν is the collision frequency ($\omega \gg \nu$), $\Lambda_{ik}(\vec{p})$ are the components of the tensorial deformated potential, $u_{ik} = (\partial u_i/\partial x_k + \partial u_k/\partial x_i)/2$ is the deformation tensor. The functions with the indices α and β refer to the instants of time t_α and t_β. The position of the resonance is not changed by a slight inhomogeneity of the magnetic field ($b \neq 0$).

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$$\alpha_p = \frac{eH}{2h^2 W_0}\left|\sum_s g'_{ss} J_{ss} e^{ikw_{ss}}\right|^2 |\beta''|^{-\frac{1}{3}} (\pi|b|)^{-\frac{1}{4}} \Gamma\left(\frac{1}{4}\right)\cos\delta, \qquad (16)$$

holds for an exact resonance (W - flux of sonic energy). All principal results of the theory of magnetoacoustic resonance also hold for inhomogeneous fields if in the final formulas 1 is replaced by the effective mean free path $l_{eff} = \sqrt{\lambda L}$. The present conclusions hold for the local values of $a(\vec{R})$. The cyclotron resonance in slightly inhomogeneous or variable fields can be dealt with in a similar manner ($l_{eff} \sim (vL/\omega)^{1/2}$), but the magnetic field has to be plane and must guarantee a finite motion of the electrons perpendicular to the metal surface. With open Fermi surfaces of closed cross section (e. g., Fermi surfaces of the corrugated cylinder type) and with closed surfaces, the electron oscillates along the lines of force. In this case, the precession round the lines of force may be neglected, and one obtains

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Effect of a slightly inhomogeneous ... B125/B108

$$\alpha = (h^3 W)^{-1} \mathrm{Re} \int d^3p\, \delta(\epsilon - \mu)\, g_0^* \int_{-\infty}^{t} dt' g_0(t') \exp \left((i(\omega + \nu)(t' - t) - \right.$$
$$\left. - i\mathbf{k}[\mathbf{R}(t) - \mathbf{R}(t')] \right), \qquad (25),$$

where $\vec{R}(t) = \overline{\vec{r}}(t)$ is the trajectory averaged over the fast revolution. For large $|\vec{k}\ \vec{R}|$ and small $\nu\theta$ one can set $\alpha = \alpha_1 + \alpha_2$. I. M. Lifshits is thanked for his interest discussions. There are 3 figures and 8 references: 7 Soviet and 1 non-Soviet. The reference to English-language publication reads as follows: A. B. Pippard. Phil. Mag., 2, 1147, 1957.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR Khar'kov (Institute of Radiophysics and Electronics AS UkrSSR Khar'kov)

SUBMITTED: November 4, 1961

Card 4/4

36960

S/141/62/005/001/005/024
E032/E314

3, 2600
24.6716

AUTHORS: Kaner, E.A. and Belov, Yu.A.

TITLE: On the penetration of an electromagnetic field into magneto-active plasma

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v.5, no. 1, 1962, 47 - 60

TEXT: The authors discuss the penetration of ordinary and extraordinary waves into semi-infinite plasma in a magnetic field when the latter is parallel to the surface of the plasma. Ion motion is taken into account and no limitations are imposed on the quantity $\mu = 8\pi nT/H^2$, where n is the plasma density and T is the electron temperature. The surface of the plasma is represented by a model, in which the electrons and ions are diffusely reflected at the surface, i.e. it is assumed that after collision with the surface the particles have a steady-state Maxwellian distribution function. The analysis starts with the formulation of the transport equations for electrons and ions and is continued with a derivation of formulae for the current density and the effective penetration

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On the penetration of S/141/62/005/001/005/024
E032/E314

depths in the limiting case of weak and strong spatial distribution. Particular attention is paid to ~~the resonance~~ resonance properties of plasma at the "hybrid" frequency $\sqrt{\Omega_e \Omega_i}$ and in the region of the electron and ion gyrofrequencies Ω_e and Ω_i, respectively. The resonance effect investigated in the present paper corresponds to cases where the dielectric constant ε_{ef} of plasma becomes infinite. However, there are also resonances associated with zero values of ε_{ef} but these will be considered in a further paper. There is 1 figure.

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR (Institute of Radiophysics and Electronics of the AS UkrSSR)

SUBMITTED: May 29, 1961

Card 2/2

39245

S/141/62/005/002/006/025
E192/E382

9,9700

AUTHORS: Braude, S.Ya. and Kaner, E.A.

TITLE: Fluctuations of the radio waves of different frequencies in the troposphere

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 5, no. 2, 246 - 254, 1962

TEXT: Amplitude and phase fluctuations of single-frequency radio waves propagating in the troposphere have been investigated by several authors but the problem of radio waves of various frequencies has hardly been touched. This is studied in the paper under the assumption that the waves propagate in a nonuniform troposphere whose refractive index $\mu(r)$ fluctuates in accordance with the Gaussian correlation law: 4

$$B(r) = \overline{\mu(r)\mu(0)} = \overline{\mu^2} \exp(-r^2/\ell^2) \qquad (1)$$

where ℓ is the characteristic size of the irregularities. The following three cases are analyzed: 1) the correlation function of the fluctuations is determined at a point for two

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waves of different frequencies; 2) the amplitude and phase fluctuations are evaluated for signals of different frequencies at various points in space, such that the signal source of frequencies ω_1 and ω_2 is situated at the origin of the coordinates and the receivers are situated at two different points, A and B; 3) two transmitters of frequencies ω_1 and ω_2 are situated at a point and the receiver is situated in a different place. The investigation of the fluctuation correlation functions of various frequencies shows that in the near zone the correlation coefficient of the phase and amplitude is equal to unity and is independent of the relative frequency deviation δ, whilst in the far zone it depends substantially on δ. In the latter case, the correlation is appreciable only at very small values of δ ($\delta \ll 1$). For the values of $\delta > 1/D$ (where $D = 2\lambda r_2/\pi \ell^2$, r_1 and r_2 being lengths of the transmission paths of the transmitters of frequencies ω_1 and ω_2), the

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000520410005-4"

Fluctuations of S/141/62/005/002/006/025
E192/E382

correlation coefficient decreases rapidly and passes through zero and then at $\delta \gg 1/D$ an almost complete decorrelation of the signals takes place. There are 3 figures.

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR (Institute of Radio Physics and Electronics of the AS UkrSSR)

SUBMITTED: August 22, 1961

4

Card 3/3

S/141/62/005/002/007/025
E032/E314

9,9110

AUTHORS: Bass, F.G., Kaner, E.A. and Pospelov, L.A.

TITLE: Radio-wave fluctuations in the near zone over a plane separation boundary

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 5, no. 2, 1962, 255 - 259

TEXT: The authors investigate fluctuations in the near zone when the source and the receiver are located in a medium with random fluctuations $\delta\varepsilon$ in the dielectric constant. The fluctuations $\delta\varepsilon$ are assumed to be a random process which is stationary in time and uniform in space, so that the average $\delta\varepsilon(\underline{r}, t)\delta\varepsilon(\underline{r}', t)$ is a function of the difference $\underline{r} - \underline{r}'$ only. Using the results of previously published papers (Ref. 1 - E.A.Kaner, F.G. Bass - DAN SSSR, 127, 792, 1959; Ref. 2 - Kaner and Bass - Izv.Vyssh. uch. zav. - Radiofizika, 2, 553, 1959; Ref. 3 - -do- 565 and Ref. 4 - Bass, S.Ya.Braude, A.V. Men' and E.A. Kaner - UFN, 23, 89, 1961), formulae are

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1/B

34643

24.6720
24.6410

S/056/62/042/002/026/055
B108/B104

AUTHORS: Kaner, E. A., Yakovenko, V. M.

TITLE: Theory of transition radiation

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 2, 1962, 471 - 478

TEXT: The transition radiation of a particle at the boundary between a plasma and a vacuum is studied in kinetic approximation. The problem of an electron moving perpendicularly out from a plasma consists of the Maxwell and linearized kinetic equations and is solved by the Fourier technique. The final result for the spectral density of radiation in the vacuum is

$$\frac{dW}{d\omega d\Omega} = \frac{e^2 \xi^2 \sin^2\theta \cos^2\theta}{\pi^2 c (1 - \beta^2 \cos^2\theta)^2} |\eta(\varepsilon, \theta)|^2. \qquad (5)$$

where $\beta = v_0/c$, θ - angle between direction of motion (z axis) and observer, $d\Omega$ - solid angle element in the θ direction. Formula (5) accounts for

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Theory of transition radiation S/056/62/042/002/026/055
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transition radiation as well as for Cherenkov radiation emitted in the vacuum on the longitudinal waves in the plasma with attenuation. It is shown that in the case of weak spatial dispersion both of the above radiation components contribute to the radiative losses of the electron. In the case of strong dispersion the transition radiation is determined only by the surface impedance of the plasma. For weak dispersion

$$\eta = \frac{1 + \beta\zeta + \beta B (1 - \beta^2 \cos^2\theta)}{\cos\theta + \zeta}, \tag{6}$$

$$\zeta = \frac{(\varepsilon_0 - \sin^2\theta)^{1/2} + \alpha^{1/2} (\varepsilon_0 - \alpha \sin^2\theta)^{1/2}}{\alpha (\varepsilon_0/\alpha - \sin^2\theta)^{1/2} [(\varepsilon_0 - \sin^2\theta)^{1/2} + (\varepsilon_0/\alpha - \sin^2\theta)^{1/2}]}, \tag{7}$$

$$1/B = \alpha [1 - \beta (\varepsilon_0 - \sin^2\theta)^{1/2}] [1 - \beta (\varepsilon_0 \alpha^{-1} - \sin^2\theta)^{1/2}] [(\varepsilon_0 - \sin^2\theta)^{1/2} + (\varepsilon_0/\alpha - \sin^2\theta)^{1/2}];$$

$$\varepsilon_0 = 1 - \frac{\omega_0^2}{\omega(\omega - i\nu)}, \quad \alpha = \frac{3T}{mc^2} \frac{\omega_0^2}{\omega^2}, \quad \omega_0^2 = \frac{4\pi e^2 n}{m}. \tag{8}$$

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and for strong dispersion (impedance approximation)

$$\eta = \frac{1+\beta\zeta}{\cos+\zeta}, \quad \zeta = \left(\frac{Z}{27\pi}\right)^{1/2}\left(\frac{\omega^2\sqrt{mT}}{ne^2c}\right)^{1/3}(1+i\sqrt{3}). \qquad (9)\ (10)$$

1. The radiation losses of a particle moving through a gyrotropic body without spatial dispersion is calculated. In such a case,

$$\eta = [(\cos\theta + P)(1 + Q\cos\theta) - R^2\cos\theta]^{-1}\Big\{(1+Q\cos\theta)(1+\beta P) - \beta R^2\cos\theta + \\ + \frac{1-\beta^2\cos^2\theta}{\varepsilon_0(\mu_2^2-\mu_1^2)}\left[\frac{(\mu_1^2-s_1^2)(1+Q\cos\theta)+qR\cos\theta}{1-\beta\mu_1} - \frac{(\mu_2^2-s_1^2)(1+Q\cos\theta)+qR\cos\theta}{1-\beta\mu_2}\right]\Big\}, \qquad (13)$$

where

$$P = \frac{s_0^2(s_1^2+\mu_1\mu_2)}{\varepsilon_0\mu_1\mu_2(\mu_1+\mu_2)}, \quad Q = \frac{\varepsilon_1 s_0^2 + \varepsilon_0\mu_1\mu_2}{\varepsilon_0\mu_1\mu_2(\mu_1+\mu_2)},$$

$$R = \frac{g s_0^2}{\varepsilon_0\mu_1\mu_2(\mu_1+\mu_2)}, \quad s_0^2 = \varepsilon_0 - \sin^2\theta, \quad s_1^2 = \varepsilon_1 - \sin^2\theta; \qquad (14)$$

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μ_1 and μ_2 are the roots of the equations

$$\varepsilon_0\mu^4 - \mu^2(\varepsilon_1 s_0^2 + \varepsilon_0 s_1^2) + s_0^2(\varepsilon_1 s_1^2 - g^2) = 0, \quad (15)$$

$$\mu_{1,2}^2 = (2\varepsilon_0)^{-1}\{\varepsilon_1 s_0^2 + \varepsilon_0 s_1^2 \pm [(\varepsilon_1 s_0^2 - \varepsilon_0 s_1^2)^2 + 4\varepsilon_0 s_0^2 g^2]^{1/2}\},$$

whose real parts are positive and whose imaginary parts are negative. The radiative losses in an isotropic transparent medium without spatial dispersion are discussed, too. Mention is made of V. L. Ginzburg, I. M. Frank (ZhETF, 16, 15, 1946), G. M. Garibyan (ZhETF, 33, 1403, 1957), V. Ye. Pafomov (ZhETF, 36, 1853, 1959), and B. L. Zhelnov (ZhETF, 40, 170, 1961). There are 12 references: 11 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Van der Waerden. Appl. Sci. Res., B2, 33, 1951.

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Theory of transition radiation

S/056/62/042/002/026/055
B108/B104

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR (Institute of Radiophysics and Electronics of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: July 2, 1961

Card 5/5

39670
S/056/62/043/001/031/056
B104/B102

24.7000

AUTHOR: Kaner, E. A.

TITLE: Theory of acoustic cyclotron resonance in metals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 216 - 226

TEXT: The volume cyclotron resonance in metals, excited by high-frequency sound ($\omega t_0 \gg 1$, ω = frequency, t_0 = relaxation time), is studied theoretically in continuation of a previous paper (ZhETF, 40, 214, 1961). The dependence of shape, width, and position of the resonance peaks of the sound absorption coefficient on the frequency, magnetic field, temperature, topology, and shape of the Fermi surfaces, etc., is studied. The ordinary cyclotron resonance and the magnetoacoustic resonance are closely interrelated in the acoustic cyclotron resonance. In contrast to electromagnetic cyclotron resonance, the acoustic resonance is also possible if $\vec{k}$ is not perpendicular to $\vec{H}$. An experimental observation permits the determination not only of the extreme values of the effective masses and

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S/056/62/043/001/031/056
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Theory of acoustic cyclotron...

the diameters of the Fermi surface but also the effective masses and the mean velocities on any cross section, as well as the direction and period of open trajectories, etc. The theory is in good agreement with results obtained for gallium by B. W. Roberts (Phys. Rev. Lett., 6, 453, 1961). There is 1 figure.

ASSOCIATION: Institut elektroniki i radiofiziki Akademii nauk USSR (Institute of Electronics and Radiophysics of the Academy of Sciences UkrSSR)

SUBMITTED: February 9, 1962

Card 2/2

L 17623-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/IJP(C) GG/JD 61
S/056/63/044/003/038/053
60

AUTHOR: Kaner, E. A.

TITLE: Anomalous penetration of metals by an electromagnetic field 19
21

PERIODICAL: Zhurnal eksperimental'noy i tekhnicheskoy fiziki, v. 44, no. 3, 1963, 1036-1049

TEXT: Azbel' (Ref. 1: ZhETF, 39, 400, 1960) showed that in the case of a cyclotron resonance at very high frequencies in a rigorously parallel magnetic field there must exist sharp bursts of fields and currents at depths much larger than the usual skin depth. The author investigates the penetration of the metal by an electromagnetic field and shows that field and current bursts appear in the metal at a depth $\xi = nD_0$ (n is an integer and D_0 is the orbit diameter) if the magnetic field is slightly inclined under conditions of the anomalous skin effect. The amplitude of these bursts decrease very slowly at distances of the order of D_0^3/δ_{eff} (δ_{eff} is the effective depth of the skin layer). A pronounced periodic variation of the effective attenuation length of the bursts during cyclotron resonance is predicted for a slightly inclined field. The anomalies in penetration

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L 17623-63

S/056/63/044/003/038/053

Anomalous penetration of metals...

of fields with $\vec{H}$ parallel to the surface are considered in connection with the experiments of V. F. Gantmakher (Ref. 3: ZhETF, 43, 345, 1962). It is shown that in the general case the bursts decay quite rapidly but for some special dispersion laws the decay may be very slow. Various effects (e.g., the effect on the surface impedance) due to the presence of field burst in a metal are also considered. There are 7 figures.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR (Institute of Radiophysics and Electronics of the AS USSR)

SUBMITTED: October 24, 1962

Card 2/2

KANER, E.A.; SKOBOV, V.G.

Theory of resonance generation of weakly damped electromagnetic waves in metals. Zhur. eksp. i teor. fiz. 45 no.3:610-630 S '63. (MIRA 16:10)

1. Fiziko-tekhnicheskiy institut imeni A.F. Ioffe AN SSSR i Institut radiofiziki i elektroniki AN Ukrainskoy SSR.

(Electromagnetic waves)

GANTMAKHER, V.F.; KANER, E.A.

Dimensional effect in the presence of a drift of electrons inside a metal. Zhur. eksp. i teor. fiz. 45 no.5:1430-1444 N '63. (MIRA 17:1)

1. Institut fizicheskikh problem AN SSSR i Institut radiofiziki i elektroniki AN UkrSSR.

KANER, E. A.

E. A. Kaner and V. G. Skobov, "Undamped Waves in Metals."

report submitted for the Conference on Solid State Theory, held in Moscow, December 2-12, 1963, sponsored by the Soviet Academy of Sciences.

ACCESSION NR: AP4012555 S/0056/64/046/001/0273/0286

AUTHORS: Skobov, V. G.; Kaner, E. A.

TITLE: Theory of coupled electromagnetic and sound waves in metals situated in a magnetic field

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 273-286

TOPIC TAGS: electromagnetic wave, sound wave, acoustic wave, resonant interaction between waves, inductive interaction, resonant coupling, coupled wave, coupled wave damping, coupled wave velocity, coupled wave polarization, wave transformation, mutual wave transformation

ABSTRACT: It is shown that resonance interaction between weakly damped electromagnetic and sound waves in metals results in their mutual transformation and gives rise to coupled waves. In metals with unequal electron and hole concentrations the coupling is due to

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ACCESSION NR: AP4012555

inductive interaction between the electrons and the lattice. When transverse oscillations propagate along the magnetic field, the coupling near resonance is so strong that the distinction between electromagnetic and sound waves is lost. The coupling, velocity, and damping of the waves are highly anisotropic relative to the angle between the wave vector and the magnetic field. In addition, when acoustic oscillations resonate with electromagnetic waves that have a discrete spectrum and a wavelength small compared with the Larmor radius the coupling of the waves is determined by the deformation interaction between the electrons and the sound waves. The velocity, damping, and polarization of the coupled waves are found for all the cases in question. The coefficients of mutual transformation of the different waves are calculated. Excitation of coupled oscillations by external fields is considered. Orig. art. has: 68 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR

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ACCESSION NR: AP4012555

(Physicotechnical Institute AN SSSR); Institut radiofiziki i elektroniki AN UkrSSR (Institute of Radiophysics and Electronics, AN UkrSSR)

SUBMITTED: 14Jun63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 009 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000520410005-4"

ACCESSION NR: AP4025944 S/0056/64/046/003/1106/1116

AUTHORS: Kaner, E. A.; Skobov, V. G.

TITLE: Electromagnetic waves in metals with arbitrary law of electron dispersion

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 1106-1116

TOPIC TAGS: electromagnetic wave in metal, arbitrary electron dispersion, Larmor radius, carrier mean free path, electric conductivity tensor, helical magnetic wave, magnetohydrodynamic wave propagation, polarization, Fermi surface, Alfven wave

ABSTRACT: Unlike the earlier investigation by the authors, where isotropic dispersion of the carriers was considered (ZhETF v. 45, 610, 1963), in the present article the theory of propagation of electromagnetic excitation in a metal situated in a strong magnetic

ACCESSION NR: AP4025944

field is considered for an arbitrary electron dispersion law. A limiting case is analyzed, where the excitation wavelength is large compared with the Larmor radius and small compared with the carrier mean free path. It is shown that the anisotropy of the electron dispersion results in singularities in the spectrum, attenuation, and polarization of the excitations. The electric conductivity tensor and the magnetohydrodynamic wave propagation are analyzed in such a metal. In metals with singly-connected Fermi surface the attenuation of the helical electromagnetic wave is nonmonotonic in the field strength. The polarization of this wave depends both on the direction and on the strength of the static magnetic field. In metals with equal hole and electron densities, the anisotropy of the Fermi surface leads to disappearance of the Alfven wave in the region where the Alfven velocity is smaller than the Fermi velocity. On the other hand, a new electromagnetic wave is generated in this region, with a quadratic spectrum independent of the field strength. The electric field vector of this wave is directed along the static mag-

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ACCESSION NR: AP4025944

netic field. Orig. art. has: 1 figure and 38 formulas.

ASSOCIATION: Institut radiofiziki i elektroniki AN UkrSSR (Institute of Radiophysics and Electronics, AN UkrSSR); Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR (Physicotechnical Institute AN SSSR)

SUBMITTED: 20Sep63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 008

Card 3/3

S/0181/64/006/004/1104/1114

ACCESSION NR: AP4028438

AUTHORS: Kaner, E. A.; Skobov, V. G.

TITLE: Electromagnetic excitation in metals in the vicinity of cyclotron resonance

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 1104-1114

TOPIC TAGS: electromagnetic excitation, cyclotron resonance, Larmor radius, spiral wave, magnetic field

ABSTRACT: In metals with different concentrations of electrons and "holes," a spiral wave forms with a squared law of dispersion and with elliptical polarization. In metals with like carrier concentrations, magnetohydrodynamic electromagnetic waves arise with linear spectrum and plane polarization, or a "longitudinal" wave with a squared law of dispersion forms (in which the electric field is polarized along the steady magnetic field). The frequency of these waves is much less than the cyclotron frequency, and the wavelength is large in comparison with the Larmor radius of the electrons. In a strong magnetic field, the movement of electrons in the plane perpendicular to the magnetic field is finite. Therefore, when the Larmor radius becomes smaller than the electron free path, the effective dielectric

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ACCESSION NR: AP4028438

constant of the metal becomes a substantial positive value, large in comparison with the dissipative part. The waves are damped by collisions of electrons with scattering, or they are damped by absorption of the electromagnetic field by electrons moving in phase with the wave. The authors show that high-frequency, weakly damped electromagnetic waves exist in the vicinity of cyclotron resonance. When the Larmor radius of the electron is large in comparison with the wavelength, two transverse waves (one ordinary, one extraordinary) and one longitudinal wave arise, propagated in a direction transverse to the magnetic field. The longitudinal wave is due to the smallness of the gyrotropic effect. In the squared spectrum of current carriers, the wave vector is steady. For the nonquadratic law of dispersion, degeneracy of natural frequency occurs: the dispersion oscillates during changes in the wave vector. In a strong magnetic field, the spiral wave arises in the vicinity of resonance. As the magnetic field increases, the spiral wave changes to a magnetosonic wave. It should be kept in mind that the polarization of waves changes with increase in magnetic field. Therefore, the impedance for a given polarization of the external electromagnetic waves is generally determined by the contribution of both types of waves. Orig. art. has: 4 figures and 45 formulas.

ACCESSION NR: AP4031156 S/0056/64/046/004/1344/1351

AUTHORS: Kaner, E. A.; Fal'ko, V. L.

TITLE: Magnetoacoustic dimensional effect in a metal plate

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1344-1351

TOPIC TAGS: ultrasound, magnetoacoustic effect, dimensional effect, ultrasound propagation, Fermi surface

ABSTRACT: Continuing earlier investigations of high-frequency dimensional effects in a magnetic field (E. A. Kaner, DAN SSSR v. 119, 471, 1958) (V. F. Gantmakher and E. A. Kaner, ZhETF, v. 45, 1430, 1963), the authors study the dimensional effects that arise in the propagation of ultrasound through a metal plate in a magnetic field if the field is parallel to the sample surface, the oscillations associated with the geometric resonance should exhibit cutoff when the diameter of the electron orbit becomes larger than the sample

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ACCESSION NR: AP4031156

thickness. If the magnetic field makes an angle with the plate surface, the dimensional effect becomes oscillatory and a periodic function of the applied field. An investigation of the angular dependence of the period and amplitude of the oscillations makes it possible to determine the local values of the Gaussian curvature and the electron mean free path at the Fermi surface. The limiting case of relatively low acoustic frequencies and strong magnetic fields is considered. Inclination of the magnetic field relative to the plate gives rise to oscillations of the dimensional effect which are periodic in the applied field, by virtue of the electron drift from one surface to another. In the case of an infinite metal, the absorption and dispersion of the acoustic velocity exhibit resonance oscillations that are periodic in the reciprocal field. Smearing and reduction in the height of the resonance peaks is observed in thin plates of thickness small compared with the mean free path or along the normal to the surface. In the case of a thin plate the amplitude and width of the sound absorption resonance peaks are not

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ACCESSION NR: AP4031156

determined by the volume scattering but by the time of flight of the resonance electrons from one side of the plate to the other. All these conclusions are checked by calculation. Orig. art. has: 22 formulas.

ASSOCIATION: None

SUBMITTED: 20Sep63 DATE ACQ: 07May64 ENCL: 00

SUB CODE: GP NR REF SOV: 010 OTHER: 000

Card 3/3

ACCESSION NR: AP4037595 S/0056/64/046/005/1809/1819

AUTHORS: Skobov, V. G.; Kaner, E. A.

TITLE: Quantum theory of propagation of electromagnetic waves in metals in a magnetic field

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1809-1819

TOPIC TAGS: electromagnetic radiation, magnetic field, quantum electrodynamics, Landau damping, conductivity tensor, helical electromagnetic wave, electron scattering, metal lattice

ABSTRACT: The theory of propagation of electromagnetic waves under conditions of strong spatial dispersion, when the wavelength is much smaller than the mean free path of the conduction electrons, developed by the authors earlier (ZhETF, v. 45, 610, 1963 and v. 46, 1106, 1964), is extended to include the quantum limit $\hbar\Omega \gg T$ (Ω -- cyclotron frequency of conduction electrons, T -- temperature in energy

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000520410005-4"

ACCESSION NR: AP4037595

units). It is shown that the quantization of the electron state leads to giant quantum oscillations of the dissipative part of the conductivity tensor, due to Landau damping. The effect of these oscillations on the spectrum, damping, and polarization of a helical electromagnetic wave in a metal with arbitrary carrier dispersion is considered. It is shown that upon variation of the magnetic field the damping and the polarization of the helical waves experience abrupt quantum oscillations. The effect of the electron scattering on the amplitude and the waveform of the oscillations is investigated in the region of not too strong magnetic fields, for very strong magnetic fields, for ..te temperatures, and for different frequencies. Orig. art. has: 50 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences SSSR); Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR (Institute of Radiophysics and Electronics, Academy of Sciences

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ACCESSION NR. AP5016548

the ineffective electrons produces a weakly damped field component inside the metal; ... oscillations in a plane-parallel plate. The

ACCESSION NR: AP5016548

has figures and 18 formulas

Institut fiziki tverdogo ... Academy of Sciences, SSSR ... Akademy of Sciences UkrSSR (Institute of Radio ... Academy of Sciences, UkrSSR)

L 18774-66 EWT(1)/EWT(m)/T/EWP(t) JD/GG
ACC NR: AP6002733 SOURCE CODE: UR/0056/65/049/006/1895/1903
46
43
B

AUTHORS: Kaner, E. A.; Fal'ko, V. L.

ORG: Institute of Radiophysics and Electronics, Academy of Sciences, Ukrainian SSR (Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR)

TITLE: Concerning the question of anomalous penetration of an electromagnetic field in a metal

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 6, 1965, 1895-1903

TOPIC TAGS: skin effect, electron distribution, electron interaction, electromagnetic effect, alternating electromagnetic field

ABSTRACT: The authors propose a new mechanism to explain the anomalous penetration of a high-frequency electromagnetic field into a metal in the presence of a strong (constant and uniform) magnetic field, which has recently been observed by several investigators, and especially the appearance of high-frequency field and current peaks 2

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L 18774-66
ACC NR: AP6002733

3

in the interior of the metal at large distances from the surface. According to this mechanism some of the electrons interact effectively with the electromagnetic field near the surface of the metal while others give rise to skin layers in the interior of the metal. Unlike in earlier investigations, this mechanism is highly effective at relatively large angles of inclination of the magnetic field with respect to the surface. It is shown that such separation of the electrons into different groups leads to the appearance of a periodic system of narrow and slowly decaying peaks. The effect should occur in pure single crystals of metals in a magnetic field which is inclined to the sample surface. A detailed theory is developed for this effect on the basis of a solution of the Maxwell equation for the field in the interior of the metal. Possible detection of this effect by observing the high-frequency size effect in a sample is discussed. Orig. art. has: 3 figures and 37 formulas.

SUBCODE: 20/ SUBM DATE: 06Jul65/ ORIG REF: 008/

Card 2/2

L ... -66 EWT(1)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6014042 SOURCE CODE: UR/0056/66/050/004/1013/1023

53
52

AUTHOR: Blank, A. Ya.; Kaner, E. A.

ORG: Institute of Radiophysics and Electronics, Academy of Sciences, Ukrainian SSR
(Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR)

B

TITLE: The phonon spectrum of metals in a magnetic field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, 1966, 1013-1023

TOPIC TAGS: metal property, phonon spectrum, phase velocity, sound absorption, quantum oscillation

ABSTRACT: It is shown that when a metal is placed in a strong magnetic field the experimentally observed anomalies of the phonon spectrum exhibit a stronger degree of singularity (logarithmic) in the phase velocity of the phonon, even in the case of a spherical Fermi surface. Furthermore, the single anomaly observed in weak magnetic fields is replaced by a whole system of singular points due to the quantization of the electron states on the Fermi surface. The quantization of the energy levels of the electron leads to many oscillatory effects, especially giant oscillations in the absorption of sound, and these singularities are investigated in this article. No account is taken of umklapp processes and the analysis is confined to isotropic dispersion of the electrons. The calculation is first made for zero temperature, after which allowance is made for dissipation. It is shown that the giant

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Card 2/2 20

L 05780-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6031449 SOURCE CODE: UR/0056/66/051/002/0586/0600

AUTHOR: Kaner, E. A.; Fal'ko, V. L.

37

13

ORG: Institute of Radiophysics and Electronics, Academy of Sciences Ukrainian SSR (Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR)

TITLE: Shape of the curve of radio-frequency dimensional effect in metals

SOURCE: Zh eksper i teor fiz, v. 51, no. 2, 1966, 586-600

TOPIC TAGS: radio frequency effect, electromagnetic wave, wave attenuation, skin layer

ABSTRACT: A theory is developed for the shape of the curve of the radio-frequency dimensional effect due to the cut-off of extreme electron trajectories in a metal plate. It is shown that the shape of the curve is directly connected to the nature of the attenuation of the electromagnetic waves in the skin layer. The inverse problem is solved for determining the field in a metal from experimental data. The shape of the curve is calculated for the exponential law of radio-wave attenuation. The authors thank M. Ya. Azbel' for valuable comments. Orig. art. has: 3 figures and 64 formulas. [Based on authors' abstract]

Card 1/1 SUB CODE: 20/SUBM DATE: 05Mar66/ORIG REF: 014/

Card 1/2 UDC: 538.3

L 07879-67

ACC NR: AP6032249

0

6. Arbitrary law of conduction electron dispersion. Electric conductivity tensor. 7. Helicon waves (anisotropic case). 8. Magnetohydrodynamic waves (arbitrary carrier dispersion law). 9. Excitation of electromagnetic waves in metals by an external field. Surface impedance. 10. Experimental observation of electromagnetic waves in metals. II. Short waves ($kR \gg 1$). 11. Qualitative considerations. 12. Asymptotic behavior of the conductivity tensor. 13. Low-frequency waves with discrete spectrum. 14. High-frequency waves with discrete and continuous spectrum. 15. Excitation of waves with discrete spectrum. New resonance effect. 16. Electromagnetic waves in the vicinity of cyclotron resonances. Tables summarizing the various types of waves, the conditions under which they exist, their spectrum, their relative damping and polarization, are presented for slow and fast helicon waves, magnetohydrodynamic waves, Alfven waves, magnetic-sound waves, low- and high-frequency waves with discrete and continuous spectra, ordinary and extraordinary waves, longitudinal waves, and others. Orig. art. has: 7 figures, 216 formulas, and 2 tables.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 021/ OTH REF: 017

Card 2/2 bc

GALANOV, I.G., otv. red.; MATLAKHOV, S.G., otv. red.; POLESIN, Ya.L., red.; BOGOMOLOV, A.I., red.; ZHELEZNYAKOVA, M.A., red.; ZHIDOVETSKIY, B.V., red.; ZIL'BERSHTEYN, I.A., red.; KANER, I.Ye., red.; KLYUYEVA, Ye.P., red.; KOZLOVA, Ye.I., red.; MAKAROV, A.D., red.; SAMARTSEV, A.I., red.; SOLOPKO, A.P., red.; TIKHONOV, V.A., red.; VOLKOVA, V.A., ved. red.

[Safety regulations in the gas industry; regulations obligatory for all ministries, departments, and organizations] Pravila bezopasnosti v gazovom khoziaistve; pravila obiazatel'ny dlia vsekh ministerstv, vedomstv i organizatsii. Perer. i dop. izd. Moskva, Nedra, 1965. 143 p. (MIRA 18:3)

1. Russia (1917- R.S.F.S.R.) Gosudarstvennyy komitet po nadzoru za bezopasnym vedeniem rabot v promyshlennosti i gornomu nadzoru.

KANEPÁ, Antonin

VOLF, Jaroslav, Dr; PACHNER, Petr, Dr; KANERA, Antonin, Ing.; BRAHA, Vladimir

Possibility of further decrease of dustiness during wet drilling my means of wetting agent. Pracovni lek. 6 no.3:161-165 Je '54.

1. Z KHMS, oddeleni hyg. prace a nem. z povolani v Ostrave (ved. oddeleni Dr P.Pachner) a z Katedry dobyvachich stroju Vysoke skoly banske (prof. ing. Kankovsky)
(DUST,
*control in drilling)

KAMBSIC, Franjo, major dr.; CVEJIC, Djordje

Case of uterine rupture in two consecutive pregnancies in the same woman. Med. pregl., Novi Sad 7 no.3:229-232 1954.

1. Hirurske odeljenje Vojen bolnice, Petrovaradin, nacelnik pukovnik dr. Nedeljko Djukic; Ginekolosko-akuserske adeljenje Gl.Pokr. bolnice, Novi Sad, sef dr. Djura Dekanic.

(PREGNANCY, compl.
uterine rupt.)
(UTERUS, rupt.
in pregn.)

JELESIC, Gojko, major dr; KAMESIC, Franjo, major dr; JELESIC, Renata, dr

Case of rectal carcinoma operated under artificial hibernation. Med.pregl., Novi Sad 7 no.6:494-498 1954.

1. Pokrajinska medicinsko-istrazivacka laboratorija, Novi Sad. Direktor: dr Petar Svarc. Hirusko odeljene Vojne bolnice. Petrovaradin. Nacelnik: major dr Franjo Kamesic

(RECTUM, neoplasms,
surg., artif. hibernation)
(HIBERNATION, artificial,
in cancer of rectum surg.)

KANESIC, F.

The treatment of supracondylar fractures of humerus in children. Med. pregl., Novi Sad 8 no.4:227-231 1955.

1. Hirusko odelenje Vojne bolnice - Petrovaradin. Nacelnik; major dr. Franjo Kanesic.

(HUMERUS, fract.
supracondylar, in child., surg., extension splint method (Ser))
(FRACTURES,
humerus, supracondylar, in child., surg., extension splint method (Ser))

KARESIC FRANJO

GASPAROV, Anton; DJUKIC, Nedeljko; KARESIC, Franjo

Value of various liver function tests in diagnosis of anatomic injuries of liver parenchyma in cholecystitis & cholecystitis & cholelithiasis. Med. glasn. 11 no.3:88-90 Mar 57.

1. Oblasna vojna bolnica u Beogradu. Vojna bolnica u Petrovaradinu.
(CHOLELITHIASIS, pathol.
inj. to parenchyma of liver, diag. with liver funct. tests (Ser))
(CHOLECYTITIS, pathol.
same)
(LIVER FUNCTION TESTS, in var. dis.
diag. of parenchymal damages of liver in cholecystitis & cholelithiasis (Ser))

TENCHOV, G.; SAKHATCHIEV, A.; ZOGRAFOV, D.; MITROV, G.; KANETA, Ia.

Occupational ionizing radiation injuries in medical personnel in Bulgaria. Suvrem. med., Sofia 10 no.1:37-44 1959.

1. Iz Katedrata po pentgenologiia i radiologiia pri ISUl (Zav. katedrata: prof. G. Tenchov).

(RADIATIONS, inj. eff.
in med. personnel (Bul))
(OCCUPATIONAL DISEASES,
radiation inj. in med. personnel (Bul))

KANETI, Ia.; IVANOV, Khr.

Radioiodine therapy of thyrotoxicosis. Suvr. med. (Sofiia) 16 no.9:525-530 '65.

1. Katedra po rentgenologiia i radiologiia (rukovoditel - prof. F. Khadshidekov), Institut s spetsiializatsiia i usuvurshenstvuvane na lekarite, Sofiia.

KANETI, IA.

Thyroid uptake of radioactive iodine I-131 test and its diagnostic significance. Suvr. med. 12 no.9:95-97 '61.

1. Iz Katedrata po rentgenologiia i radiologiia pri institut za spetsializatsiia i usuvurshenstvuvane na lekarite (Rukovod. na katedrata prof. G. Tenchov[deceased]

(THYROID GLAND physiol)
(IODINE metab)

L 29778-66

ACC NR: AP6020855 SOURCE CODE: BU/0016/65/000/009/0525/0530

23
B

AUTHOR: Kaneti, Ya.; Ivanov, Khr.

ORG: Department of Roentgenology and Radiology /headed by Prof. G. Khadzhidekov/, Institute for Postgraduate Medical Education (Katdera po rentgenologiya i radiologiya pri ISUL)

TITLE: Radioiodine treatment of hyperthyroidism

SOURCE: Suvremenna meditsina, no. 9, 1965, 525-530

TOPIC TAGS: radiotherapy, thyroid gland, iodine, radiation biologic effect

ABSTRACT: Report on 563 patients with hyperthyroidism, treated with I^{131} between 1958 and 1960 and followed up to 5 to 7 years: ages, doses, total dose, size of thyroid, exophthalmos, symptoms. Myxedema was side effect in 14, permanent in 3, including one of very late onset (5 years after end of therapy.) Orig. art. has: 1 figure and 7 tables. [Based on authors' Eng. abst.] [JPRS]

SUB CODE: 06 / SUBM DATE: 00Nov64 / ORIG REF: 001 / OTH REF: 004
SOV REF: 001

Card 1/1

TUMANYAN, V.A.; SARINYAN, M.G.; GALSTYAN, D.A.; KANETSYAN, A.R.;
ARUSTAMOVA, M.Ye.; SARKISYAN, G.S.

Investigation of hypernuclei produced by 8.8 Bev. protons. Zhur.
eksp.i teor.fiz. 41 no.4:1007-1012 O '61. (MIRA 14:10)

1. Fizicheskiy institut AN Armyanskoy SSR.
(Nuclei, Atomic) (Protons)

L 17603-63 EWT(m)/BDS AFFTC/ASD S/056/63/044/003/014/053 57 56

AUTHOR: Arustamova, M. Ye., Kanetsyan, A. R., Sarinyan, M. G., Toshyan, R. T., Tumanyan, V. A., and Tymanyan, E. R.

TITLE: Production of hypernuclei by 8.8 Bev protons

PERIODICAL: Zhurnal eksperimental'noy i tekhnicheskoy fiziki, v. 44, no. 3, 1963, 861-865

TEXT: This paper is the continuation of the work investigating the production of hypernuclei in photoemulsion exposed to the internal 8.8 Bev proton beam. The experimental procedure was described in an earlier paper by V. A. Tumanyan, M. G. Sarinyan, D. A. Galstyan, A. R. Kanetsyan, and M. Ye. Arustamova (Ref. 1: ZhETF, 41, 1007, 1961). The results are summarized in Table 1 containing the first known cases of the B_{Λ}^{10} and B_{Λ}^{11} decays. The article concludes with a detailed discussion of the results on the basis of theoretical suggestions by F. Ferrary and L. Fonda (Ref. 3: Nuovo Cim., 7, 320, 1958) and H. Primakoff and W. B. Cheston (Ref. 4: Phys. Rev., 92, 1537, 1953). The physical results are in agreement with the conclusions of the first part of the Ref. 1. There are 3 figures and 2 tables.

Card 1/5 ASSOCIATION: Physics Institute of the Academy of Sciences of the Armenian SSR.

KANETSYAN, G., inzhener.

Remodelling the MT-1 rock milling machine. Streitel' no.2:19 F '57. (MIRA 10:3)

(Stonecutting)

KANETSYAN, G.M.

Static and fatigue strength of reinforce , concrete beams. Izv. AN Arm. SSR. Ser. tekh. nauk 17 no.2:53-60 '64 (MIRA 17:7)

1. Armyanskiy nauchno-issledovatel'skiy institut stroitel'nykh materialov i sooruzheniy.

PINADZHYAN, V.V.; KANETSYAN, G.M.; ACETISYAN, R.S.

Static and fatigue strength of reinforced concrete beams.
Izv. AN Arm. SSR. Ser. tekh.nauk 15 no.4:35-42 '62.
(MIRA 15:9)

1. Armyanskiy nauchno-issledovatel'skiy institut stroitel'nykh materialov i sooruzheniy.
(Strength of materials)
(Reinforced concrete construction)

KANETSIAN, G.M.

Static and fatigue strength of wire reinforced concrete beams. Izv. AN Arm. SSR. Ser. tekh. nauk 17 no.4:69-75 '64. (MIRA 17:11)

1. Armyanskiy nauchno-issledovatel'skiy institut stroitel'nykh materialov i sooruzheniy.

KANEV, A.

Study of the remnants of the human musculi peronei digitorum.
Arkh.anat.gist. i embr. 48 no.3:70-78 Mr '65.
(MIRA 18:6)

1. Kafedra anatomii cheloveka Vysshego meditsinskogo instituta (zav. - chlen-korrespondent Bolgarskoy Akademii nauk prof. D.Kadanov), Sofiya, Bolgariya.

KANEV, A.A.

USSR/Engineering

Card 1/1

Author : Kukibnyy, A. A. Cand. in Tech. Sciences

Title : Power and its uses

Periodical : Nauka i Zhizn' 21/2, 46-47, Feb/1954

Abstract : In 1953 a book was published, entitled, "From the Water Wheel to the Atomic Engine," by A. A. Kanev. The book enumerates the sources of power in the Soviet Union and describes their development. It advocates the use of sources of power that are not now being exploited, such as power direct from the sun and heat from the interior of the earth. The book brings the history of power development down to experimentation on power from the nuclear reaction of uranium and hydrogen.

Institution : ....

Submitted : ....

DULIN, I.L.; YESIFOV, P.T.; ANTONOV, N.V.; KANEV, A.I.; SOKOLOV, V.P.; BUGRO, Z.N.; POPOV, V., red.

[The Pechora Coal Basin in the seven-year plan; a technical and economic survey for 1958-1963] Pechorskii ugol'nyi bassein - v semiletke; tekhniko-ekonomicheskii obzor za 1958-1963 gg. Syktyvkar, Komi knizhnoe izd-vo, 1964. 92 p. (MIRA 18:4)

S/057/62/032/002/020/022
B124/B102

AUTHORS: Uflyand, Ya. S., and Kanev, A. N.

TITLE: The influence of the anisotropy in conductivity on the flow of a conducting gas through pipes

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 2, 1962, 249 - 252

TEXT: The flow of a viscous, incompressible, electrically conducting fluid in a pipe with constant diameter in the presence of an external magnetic field is examined on the assumptions that the viscosity coefficient η of the weakly ionized gas be a scalar quantity, and that the effect of ion slide relative to the medium be negligible. Ohm's law can be written as $\vec{J} + \frac{\omega\tau}{H(0)}\left[\vec{J}\times\vec{H}\right] = \sigma\left\{\vec{E} + \frac{[\vec{v}\times\vec{H}]}{c}\right\}$, $\omega = \omega_e \frac{H(0)}{H}$, where $\vec{J}$ is the current density, ω_e is the electron Larmor frequency, τ is the mean free time, σ is the conductivity, $\vec{v}$ is the flow rate of the gas and c is the velocity of light. Assuming the Reynolds number to be small, the magneto-hydrodynamic equation is $\eta\Delta\vec{v} - \rho(\vec{v}\nabla)\vec{v} - \nabla p + \frac{1}{4\pi}$ curl$[\vec{H}\times\vec{H}]$ = 0, curl $\vec{E}$ = 0, div $\vec{v}$ = 0, div $\vec{H}$ = 0 is

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The influence of the ... S/057/62/032/002/020/022
B124/B102

solved by expansions: $\vec{v} = \vec{v}_0 + R_m\vec{v}_1 + \dots$, $\vec{H} = \vec{H}_0 + R_m\vec{H}_1 + \dots$, $p = p_0 + R_m p_1 + \dots$ (3), where ρ is the density, and p is the pressure. The system of first-approximation equations is

$$\left.\begin{aligned} &\eta\Delta\mathbf{v}_1 - \rho(\mathbf{v}_1\nabla)\mathbf{v}_0 - \nabla\left[p_1 + \frac{(\mathbf{H}_0\mathbf{H}_1)}{4\pi}\right] + \frac{1}{4\pi}(\mathbf{H}_0\nabla)\mathbf{H}_1 = 0,\\ &\Delta\mathbf{H}_1 - \omega\tau(\mathbf{l}\nabla)\,\mathrm{rot}\,\mathbf{H}_1 + \frac{1}{ul}(\mathbf{H}_0\nabla)\mathbf{v}_0 = 0;\ \mathrm{div}\,\mathbf{v}_1 = 0;\ \mathrm{div}\,\mathbf{H}_1 = 0, \end{aligned}\right\} \quad (7),$$

or, in scalar quantities,

$$\left.\begin{aligned} &\eta\Delta v_{1x} - \frac{\partial}{\partial x}\left[p_1 + \frac{(\mathbf{H}_0\mathbf{H}_1)}{4\pi}\right] + \frac{H^{(0)}}{4\pi}\frac{\partial H_{1x}}{\partial x} = 0,\\ &\eta\Delta v_{1y} - \frac{\partial}{\partial y}\left[p_1 + \frac{(\mathbf{H}_0\mathbf{H}_1)}{4\pi}\right] + \frac{H^{(0)}}{4\pi}\frac{\partial H_{1y}}{\partial x} = 0,\\ &\eta\Delta v_{1z} - \rho\left(v_{1x}\frac{\partial v_{0z}}{\partial x} + v_{1y}\frac{\partial v_{0z}}{\partial y}\right) + \frac{H^{(0)}}{4\pi}\frac{\partial H_{1z}}{\partial x} = 0,\\ &\Delta H_{1x} - \omega\tau\frac{\partial^2 H_{1z}}{\partial x\partial y} = 0,\quad \Delta H_{1y} + \omega\tau\frac{\partial^2 H_{1z}}{\partial x^2} = 0,\\ &\Delta H_{1z} - \omega\tau\frac{\partial}{\partial x}\left(\frac{\partial H_{1y}}{\partial x} - \frac{\partial H_{1x}}{\partial y}\right) + \frac{H^{(0)}}{ul}\frac{\partial v_{0z}}{\partial x} = 0,\\ &\frac{\partial v_{1x}}{\partial x} + \frac{\partial v_{1y}}{\partial y} = 0,\quad \frac{\partial H_{1x}}{\partial x} + \frac{\partial H_{1y}}{\partial y} = 0. \end{aligned}\right\} \quad (8).$$

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For the longitudinal field H_{1z}, one obtains

$$(1+\omega^2\tau^2)\frac{\partial^2 H_{1z}}{\partial x^2}+\frac{\partial^2 H_{1z}}{\partial y^2}=-\frac{H^{(0)}}{ul}\frac{\partial v_{0z}}{\partial x}, \quad (9).$$

If the pipe walls are non-conductive, the boundary condition $H_{1z}|_{(B)} = 0$ is obtained for H_{1z}. The transverse magnetic fields H_{1x} and H_{1y} are given by $v_{1x} = \frac{\delta f}{\delta y}$ and $v_{1y} = -\frac{\delta f}{\delta x}$, and from Eq. (8) one obtains $\Delta\varphi = \omega\tau\frac{\delta H_{1z}}{\delta x} = \phi(x, y)$ (16). Since, in the non-conductive walls, $\Delta\varphi = 0$, φ is given by

$$\varphi=\frac{1}{2\pi}\iint\limits_{(\sigma)}\Phi(\xi, \eta)\ln[(x-\xi)^2+(y-\eta)^2]\,d\xi d\eta. \quad (17).$$

Induced magnetic fields are generated not only in the gas but also in the walls of the pipe. Thus, the problem under consideration results in the determination of the boundary conditions for the Poisson equation, in an equation of type (9), and, finally, in the biharmonic problem. As an example, the flow in a pipe of elliptic profile is considered. There are 1 figure and 5 references: 3 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: I. Shercliff, Proc. of

The influence of the ... S/057/62/032/002/020/022
B124/B102

the Cambr. Phil. Soc. 49, 1, 136, 1953.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad (Physicotechnical Institute imeni A. F. Ioffe, AS USSR, Leningrad)

SUBMITTED: July 17, 1961

Card 4/4

Kanev, D.

Bibliography of Bulgarian Geography Books:

Kanev, D., "The Gabrenska Valley," magazine Geografiya, 1954, Issue Number [illegible], pages [illegible].

In this short article the author gives the location, boundaries, geological structure and geomorphological development of the Gabrenska (Chukurovska) Valley, which is located southeast of Sofia among the hills to the west of the Zapadna Sredna Gora Mountains. He stresses its economic importance resulting from the rich deposits of coal and clay found there which are much needed in Bulgarian industry.

[illegible]/ds

SO: JPRS 6057, 23 Dec 60, Uncl.

KANEV, D.

Morphology of the northern ridge and foot of Losen Mountain. p. 103.
(Priroda I Znanie, Vol. 49, no. 3, 1954/55 (published 1956)).

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 6, June 1957, Uncl.

Kanev, D.

"Maritsa Iztok" P. 1
(GEOGRAFIIA, Vol. 4, No. 8, 1954 - Bulgaria)

SO: MONTHLY List of East European Accessions (EEAL), LC , Vol.4, No. 4
Apr. 1955 , Uncl.

KANEV, D.

Mount Liubash. p.4. GEOGRAFIIA. (Bulgarsko geografsko druzhestvo) Sofiya. Vol. 5, No. 5, 1955

SOURCE: East European Accessions List, (EEAL), Library of Congress Vol. 4, No. 12, December 1955

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000520410005-4"

KANEV, D.

"Professor Zheko Radev; a Biographical Sketch", P. 4,(GEOGRAFIIA, Vol. 4, No. 2, 1954, Sofiya, Bulgaria)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 1, Jan. 1955, Uncl.

KANEV, D.

"Gabra Valley", P. 1, (GEOGRAFIIA, Vol. 4, No. 3, 1954, Sofiya, Bulgaria)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 1, Jan. 1955, Uncl.

SAVOV, S.; KANEV, D.

Diagnostically difficult cases of ornithosis. Suvr. med. 13 no.8:32-36 '62.

(ORNITHOSIS)

KANEV, Diniu D.

Morphology of the Black Sea Littoral in the Mednirid region. Godishnik biol 53 no.3:75-119 '58/'59 [publ. '60].

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000520410005-4"

KANEV, Diniu

Influence of the erosion basis on the formation of gullies in the southeastern part of the Sofia Plain. Godishnik biol 55 no.3:97-108 '60/'61 [publ. '62].

KANEV, Diniu D.

Neotectonic movements in the region of the city of Sofia. Godishnik biol 56 no.3:1-46 '61-'62 [publ. '63].

KOSTIN, I.M., gornyy inzhener; KANEV, F.F., gornyy inzhener

Crushing limestone in short-cone and hammer crushers. Gor.zhur. no.3: 57-58 Mr '55. (MLRA 8:7)
(Crushing machinery) (Limestone)

KANEV, F.F., inzhener; KOSTIN, I.M., inzhener

Limestone crushing practices for sinter fluxing. Stal' 15 no.6:561-562 Je '55. (MLRA 8:8)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Limestone) (Crushing machinery)

KANEV, G., aspirant; KHARITONOV, P.

Better work is rewarded by higher wages. Sots. trud 8 no.6:44-46 Je '63. (MIRA 16:9)

1. Komi filial AN SSSR (for Kanev). 2. Nachal'nik planovo-ekonomicheskogo otdela Ministerstva proizvodstva i zagotovok sel'skokhozyaystvennykh produktov Komi ASSR (for Kharitonov).
(Komi A.S.S.R.—Agricultural wages)

VASILENKO, V.P., kand.ekon. nauk; PODOPLELOV, V.P., kand. ekon. nauk; KONOVALOV, D.A., nauchn. sotr.; KANEV, G.V., aspirant; KARNAUKHOVA, Ye.S., doktor ekon. nauk, otv.red.; BELOV, V.K., red.

[Potentialities for reducing costs in the agriculture of the Komi A.S.S.R.] Rezervy sokrashcheniia zatrat v sel'skom khoziaistve Komi ASSR. Moskva, Nauka, 1965. 178 p. (MIRA 18:10)

1. Akademiya nauk SSSR. Komi filial, Syktyvkar.

KANEV, M.S.

133-10-16/26

AUTHOR: Yudovich, S. Z., Candidate of Technical Sciences and Kanev, M.S., Engineer

TITLE: Causes of the "Wrinkle" Formation on Round Sections Rolled in a Heavy-Section Mill. (Prichiny Obrazovaniya Morshchin Na Kruglom Profile v Krupnosortnom Stane).

PERIODICAL: Stal', 1957, No.10, pp. 924-928 (USSR).

ABSTRACT: During the control of metal rolled on a mill 825 into rounds of 140 mm diameter and larger from steels ШХ15, ШХ15С , 12 - 20 ХН3А, 12-20Х2Н4А and others, surface defects in the form of wrinkles, cracks and hair cracks were observed. The characteristic distribution of defects and the appearance of wrinkles are shown in Figures 1 and 2 respectively. The calibration of roll pass used is shown in Figures 3 and 4. On an analysis of the control materials it was found that the proportion of surface defects increases with increasing diameter of the profile rolled. Investigation of various factors which could influence the formation of defects indicated that increasing temperature (within permissible limits) improves surface quality, water cooling of rolls and number of turnings (in the first stand) had no influence;